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ABSTRACT

This monograph provides an overview of intervention and programming strategies for students with emotional/behavioral disorders (E/BD) based on the behavioral approach. It reviews the progress of the behavioral perspective in education from its earliest beginnings to the present and describes its major characteristics, chief proponents, assumptions, and implications for educating children. Individual chapters address the following topics: (1) defining characteristics of the behavioral model, the behavioral paradigm, and applied behavioral analysis; (2) evolution of the behavioral model (historical background, contributions of behavioral interventions to the education of students with E/BD, and theory and research); (3) best practices (current research and practice concerning implementation of such principles as the connection between low academic achievement and behavioral difficulties, direct instruction, principles of generalization, and positive behavioral support); (4) issues, needs, and promises including a need for early identification and intervention, a need for staff development, and the advantages of behavioral interventions. (Contains approximately 110 references.) (DB)

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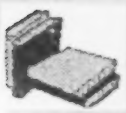

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Perspective on Emotional/Behavioral Disorders

Assumptions and Their Implications for Education and Treatment

C. Michael Nelson
Terrance M. Scott
Lewis Polsgrove

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CCBD
Council for Children with Behavioral Disorders

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Assumptions and Their Implications for Education and Treatment

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Council for Children with Behavioral Disorders

The Council for Children with Behavioral Disorders, *Publisher*

About the Council for Children with Behavioral Disorders

Council for Children with Behavioral Disorders

CCBD is an international and professional organization committed to promoting and facilitating the education and general welfare of children and youth with behavioral and emotional disorders. CCBD, whose members include educators, parents, mental health personnel, and a variety of other professionals, actively pursues quality educational services and program alternatives for persons with behavioral disorders, advocates for the needs of such children and youth, emphasizes research and professional growth as vehicles for better understanding behavioral disorders, and provides professional support for persons who are involved with and serve children and youth with behavioral disorders.

In advocating for the professionals in the field of behavioral disorders, CCBD (a division of The Council for Exceptional Children) endorses the Standards for Professional Practice and Code of Ethics adopted by the Delegate Assembly of The Council for Exceptional Children in 1983.

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Foreword

Public education is in transition. Pressure is mounting to establish and maintain safe and effective schools—schools that produce positive educational outcomes for all students. Recent federal legislation has prompted the redefinition of roles and responsibilities of many school personnel, especially those working with students who have disabilities or are at risk. In serving students labeled "seriously emotionally disturbed," "behaviorally disordered," or "emotionally/behaviorally disordered," we face new challenges to promoting positive approaches to discipline and instruction within and across educational settings.

In the midst of these uncertain times, we would do well to reflect on our history, revisit the theoretical underpinnings of our profession, and renew our commitment to finding ways to better serve students with emotional and behavioral disorders. That is the focus of the Third Mini-Library Series produced by the Council for Children with Behavioral Disorders (CCBD). Along with an exploration of historical and contemporary issues within our profession, this monograph series highlights the critical issues of safe schools, school-wide discipline, and positive behavioral supports. The following seven volumes that comprise the series are derived from the 1999 international conference sponsored by CCBD:

- *Developing Positive Behavioral Support for Students with Challenging Behaviors* by George Sugai and Timothy J. Lewis.
- *Educating Students with Emotional and Behavioral Disorders: Historical Perspective and Future Directions* by Richard J. Whelan and James M. Kauffman.

- *Historical Chronology of the Council for Children with Behavioral Disorders: 1964–1999* by Lyndal M. Bullock and Anthony L. "Tony" Menendez.
- *Perspective on Emotional/Behavioral Disorders: Assumptions and Their Implications for Education and Treatment* by C. Michael Nelson, Terrance M. Scott, and Lewis Polsgrove.
- *Psychoeducation: An Idea Whose Time Has Come* by Mary M. Wood, Larry K. Brendtro, Frank A. Fecser, and Polly Nichols.
- *A Revisitation of the Ecological Perspectives on Emotional/Behavioral Disorders: Underlying Assumptions and Implications for Education and Treatment* by Mary Lynn Cantrell, Robert P. Cantrell, Thomas G. Valore, James M. Jones, and Frank A. Fecser.
- *Safe Schools: School-Wide Discipline Practices* by Timothy J. Lewis and George Sugai.

As in previous monographs, we have drawn upon the expertise of CCBD members to assemble information that addresses the needs of professionals responsible for the education and treatment of students at risk and those who have emotional and behavioral disorders. We are grateful for their outstanding contributions to our field.

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Introduction

The use of intervention and programming strategies based on the behavioral approach in education is relatively new. Behaviorism[1] originated with Thorndike's (1911) animal experiments into the law of effect in the late 1800s. In the years since, the behavioral perspective has made a substantial impact on the education and treatment of both children and adults. In this monograph we review the progress of the behavioral perspective in education from its early beginnings to the present. As we chart the course of behaviorism, we will describe its major characteristics, chief proponents, assumptions, and implications regarding how the work of educating children is (or could be) done.

Our focus is on a segment of the student population identified as behaviorally aberrant—students with or at risk of developing emotional and behavioral disorders (E/BD). This small but significant group of students (comprising 2% to 6% of the public school student population, depending on criteria) poses serious challenges to the education system's ability and desire to provide services. Throughout our discussion we will document the contributions the

[1]We have chosen to use the term *behaviorism* to describe the generic model in which the focus of scientific or educational analysis is specific overt behavior. Thorndike's law of effect notwithstanding, the emergence of behaviorism is attributed to John B. Watson's lectures at Columbia University in 1912. Over the years, behaviorism has been known by many different terms (e.g., *operant conditioning, behavior modification, learning theory, social learning theory, applied behavior analysis*) and has developed several foci (e.g., radical behaviorism, verbal behavior, cognitive behavior modification, desensitization).

behavioral perspective has made to the education of students with challenging behavior (both social and academic) and demonstrate the empirical and social validity of this approach to solving important educational problems.

1

Defining Characteristics of the Behavioral Perspective

A central feature of the behavioral perspective is its emphasis on the role of learning in accounting for human behavior. As pointed out in virtually all basic developmental psychology textbooks, heredity and environment are the two major variables that influence human behavior. However, for behaviorists, identifying precise relationships between these inputs and the output (observed behavior) is of primary interest. More than four decades ago, Skinner (1956) observed that advances in genetic research may one day demonstrate clear functional relationships between hereditary factors and current behavior. In the meantime, however, the most successful approach to understanding behavior is through conducting functional analyses of the relationship between behavior and environmental stimuli. Skinner's observation continues to hold true. Such analyses lead to better predictions of when a particular behavior will occur (i.e., under what circumstances, in the presence of which stimuli). This information leads to greater success in achieving control over behavior.

The articulation of the concepts of *prediction* and *control* have raised eyebrows among philosophers, practitioners, and laypersons

alike. Yet, if these terms were used to describe the process of identifying and eradicating a major disease, they would be applauded. Prediction and control are the hallmarks of science. Stimuli in the human environment are the variables available for study by applied behavioral researchers (behavior analysts). Extensive research has demonstrated that humans discriminate stimuli in their environments that are associated with different outcomes—pleasant and unpleasant—and that this knowledge influences their behavior. At the level of the human organism, an awareness of the influences of environmental stimuli allows individuals to predict and control their behavior, thereby enhancing their freedom of choice over the course of their lives (Thoresen, 1973).

The Behavioral Paradigm

In its simplest form, the behavioral paradigm is described as S-R-S. The first S represents an antecedent stimulus that is discriminative of reinforcement or punishment contingencies associated with particular responses made in its presence; the R represents a specific behavior; and the second S is a stimulus occurring as a functional consequence of that particular behavior. Thus, we respond to a ringing telephone (i.e., discriminative stimulus) by answering it. This is a predictable response that is controlled by the consequences it produces (most of us are reinforced by conversation with others). For this same reason, a telephone that is not ringing does not predict telephone-answering behavior. On the other hand, we are likely to remove our foot (i.e., response) from the accelerator pedal when we see a radar patrol car (i.e., discriminative stimulus) on an interstate highway. We do this to reduce the probability of a speeding ticket (i.e., aversive stimulus). In each situation, the probability of our behavior also is influenced by *setting events*—variables that predispose our behavior or override the available contingencies. For example, if we are rushing someone to a hospital we are less likely to slow down upon spying a radar trap. Thus, our behavior operates on the

environment to produce certain effects, which then influence the probability of its future occurrence.[2]

This, then, is how behavior—whether that of an adult driving down the highway or that of a student with E/BD—works. The behavioral scientist or practitioner uses information gained from assessing behavior in the context of environmental stimuli to predict and control that behavior. Saying that this practice is unethical or immoral overlooks a fundamental principle; that is, behavior–consequence relationships continue to function in spite of what we may believe or do. Thus, a teacher may believe that lecturing a student when the student misbehaves will discourage him or her from future trespasses. However, if the teacher's lectures result in increases in such behavior over time, the lectures are not improving character or moral development, but are contingently reinforcing the student's undesirable behavior. Carr, Taylor, and Robinson (1991) studied the relationship between students who exhibited disruptive behavior and the frequency of instructional interactions provided them by their teachers. They observed that teachers spent less time with these students than with those who were not behaviorally disruptive. In this case, it was the behavior of the pupils that predicted and controlled the behavior of their teachers.

Applied Behavioral Analysis

In the inaugural issue of the *Journal of Applied Behavior Analysis*, Baer, Wolf, and Risley (1968) described the dimensions of this

[2]Not all behavior is influenced by its effects on the environment. Respondent (reflexive) behavior occurs in response to an eliciting stimulus. The general function of respondent behavior is to preserve and protect the life of the organism. Pavlov's classic experiments demonstrated that respondent behavior could be conditioned to occur in the presence of stimuli other than those that originally elicited it. Respondent conditioning explains the development of such maladaptive and emotional behavioral patterns behavior as phobias.

emerging field. *Applied* means that the behaviors selected for scrutiny and intervention are socially significant to the student, society, or both. *Behavioral* indicates that the behavior identified for study and intervention must be measurable; the practitioner must not resort to nonbehavioral substitutes (e.g., monitoring students' verbal descriptions of their behavior) instead of overt responses. Indeed, behaviorism has been criticized for ignoring thoughts and feelings. As Skinner (1956) observed, although private events may qualify as behavior, they are only observable to one person (and potentially inaccurately at that). While we cannot deny the reality of such private events, their inscrutability renders them unreliable as dependent or independent variables. Because they cannot be reliably measured, they cannot be predicted or controlled. *Analysis* means that the practitioner must demonstrate a functional relationship between environmental stimuli and the student's behavior. In other words, it must be shown that behavior changes are due to the variables being manipulated rather than to the influence of other, uncontrolled variables. These dimensions continue to guide applied behavioral researchers and practitioners who use behavioral interventions responsibly.

2

Evolution of the Behavioral Model

Historical Background

Although the origins of behaviorism usually are attributed to Thorndike and Watson's work around the turn of the century, its roots can be traced back to an earlier period, involving the emergence of a philosophy of science. Behavioral psychology began as a series of subtle but significant shifts in philosophical views on humankind and, concurrently, a number of remarkable insights regarding the nature of physical phenomena. Copernicus's hypothesis set in motion an evolution in thinking among the intelligentsia from perceiving a God-centered world to perceiving a human-centered world. The scientific revolution began in earnest in the early 1600s, when Galileo provided objective data in support of Copernican theory. In basing his assertions on measurement of observable events (i.e., movement) and experimentation, he mapped out the course of modern science. Newton's publication of *Principia Mathematica* in 1687 advanced considerably the so-called mechanical view of the world, which holds that there exists a predictable and orderly interaction between environmental phenomena. The scientific revolution shaped philosophical thinking about humankind and our relationship with the environment to a large degree, thereby setting the stage for the emergence of the field of psychology. As the physical world seems to be governed by mechanical laws, the reasoning went, so are humans (Leahey, 1980).

Descartes disputed the prevailing notion that humans are imbued with a soul that provides a native rationality and innate moral principles to guide their conduct. His philosophy replaced the soul with a mind—a structure that possessed innate ideas activated by an individual's experiences—and advanced the analogy of humans as machines subject to environmental influences. Furthermore, Descartes believed that one could study the contents of the mind as physical phenomena and thus arrive at truth by reasoning.

English philosopher Thomas Hobbes rejected the notion of an innately endowed mind. He argued instead that experience gained from sensations and perceptions of environmental changes was the sole source of human knowledge; all human behaviors, including thinking and reasoning, were determined by the environment (Hearnshaw, 1987).

John Locke's famous tabula rasa view of the mind as a blank tablet to be filled in by an individual's experiences, observations, and reflection was very much in keeping with Hobbes's theory. Moreover, Locke's "mind" was an information-processing system that enabled one to interpret experiences and to organize as knowledge ideas comprised of mental elements such as thoughts, images, feelings, and covert speech.

Locke's reasoning laid the groundwork for the so-called associationists, such as Hume, to explain thinking in terms of laws governing the linking of ideas through habit, as well as Hartley's view of the mind and reasoning as involving chains of mental atoms: impressions–sensations–ideas–associated ideas (Leahey, 1980). These British empiricists advocated studying the association of ideas through introspection to determine the inner workings of the mind. Introspection dominated psychology as its principal method for more than two centuries (Hearnshaw, 1987).

This historical backdrop, which emphasized an empirical, atomistic, associationistic, deterministic, and reductive approach, exerted a profound influence on development of the field of behavioral psychology. However, one big hurdle had to be overcome: introspection. Toward the end of the 19th century, a growing dissatisfaction with

the introspective method arose within psychology. Investigations of psychological phenomena based upon subjective evaluation were notoriously unreliable sources for making replicable inferences and deductions about human conduct or reactions. A community of scholars who wanted to establish psychology as a natural science had grown impatient with introspective analysis. The chief opponent of introspection was J. B. Watson, an animal psychologist. Watson's 1913 paper "Psychology as the Behaviorist Views It," heralded a new approach in American psychology (Leahey, 1980).

In his paper, Watson criticized the analysis of consciousness as a viable research method and condemned introspection for its failure to produce a reliable body of knowledge. Watson and other psychologists of the time saw so-called mentalistic psychology—Titchener's structuralism and Freud's psychoanalysis, for example—as going nowhere, and they moved to replace subjective analysis of experience with an objective and scientific study of animal and human behavior. To do so meant eliminating conscious processes as a component of study and focusing solely on observable behavioral reactions of organisms (i.e., behaviors) to controllable public stimuli. A primary objective of this new behavioral science was the prediction and control of behavior. Ultimately, through careful and replicable experimentation, behaviorists hoped to identify a set of universal principles that could be used to fulfill these functions across species (Skinner, 1974). An undercurrent of behavioral psychology has always been the application of scientific principles identified through research for solving societal problems and improving human conduct and learning (Skinner, 1953).

Contributions of Behavioral Interventions to the Education of Students with E/BD

Behaviorism has made enormous contributions to the improvement of services for children with E/BD by supplying reliable and replicable intervention approaches for use by parents and professionals. Early research with individuals exhibiting extreme forms of mal-

adaptive behavior found a receptive audience in researchers and practitioners who worked with students with formidable repertoires of challenging behavior. Today, behavior modification strategies, behavior therapy, and behavioral teaching approaches are being applied effectively and ethically in classrooms, clinics, and institutions. The journey from essentially ineffective interventions to very effective options for dealing with children's problem behavior has taken place over the last three decades.

Theory and Research

Beginning in the early 1960s, the development of effective behavioral interventions for treating children's emotional and behavioral disorders was propelled by a series of remarkable events. First, there arose among professionals a growing dissatisfaction with the medical model and with pyschoanalysis as a theoretical and treatment paradigm. Notably, Szasz (1960) argued that individual psychological disorders were due to stress arising from problems of living rather than from biogenic causes or intrapsychic conflicts. Second, critiques of outcomes produced by psychiatric and psychotherapeutic interventions discredited underlying assumptions and clinical practices. A succession of reviews presented damaging evidence regarding the limited effects of psychotherapy both with adults (e.g., Eysenck, 1965) and with children (Levitt, 1963). These challenges alerted professionals to the inadequacies and possible iatrogenic effects of clinical assessment procedures and residential treatment programs for individuals with psychological disorders (Kazdin, 1978). Third, a more effective alternative approach emerged: behavior modification. Skinner's (1953) *Science and Human Behavior* described how basic research on contingencies of reinforcement and punishment with animals could be used to explain and change complex human behavior. Soon afterward, reports of dramatic successes of behavioral learning theory for changing adult and child behavior in natural settings began to appear in the literature.

Lindsley's experiments in the early 1960s involving operant conditioning with psychiatric patients, and Bijou's studies with children revealed the power of this model for changing disordered behavior (Kazdin, 1978). Ullmann and Krasner's (1966) *Case Studies in Behavior Modification* provided an early collection of dramatically successful behavioral applications over a wide range of children's behavior such as childhood schizophrenia, phobia, toilet training, disruptive classroom behavior, stuttering, tics, and learning concepts. Additional studies with persons who exhibited challenging behavior in natural settings began a process of radical change in thinking and practice in the fields of clinical psychology and special education. The operant model provided the foundation for the development of applied behavior analysis, Bandura's social learning theory, interactional analysis, and cognitive behavior modification (Patterson, Reid, & Dishion, 1992). These advances and the succession of studies that followed provided professionals with powerful strategies for assessing and predicting behavior, producing significant and lasting behavioral changes, and delivering effective instruction, a legacy that continues to yield benefits.

The growing influence of behavioral applications in natural settings fostered a profoundly influential movement in the field, aptly termed *applied behavior analysis,* or ABA. This movement was officially inaugurated in 1968 with the publication of the first issue of the *Journal of Applied Behavior Analysis.* In it, Baer and colleagues (1968) dedicated ABA to the development of a methodology that could be used in natural settings to produce significant and verifiable changes in socially important observable behaviors. Other journals devoted to this approach followed, and after three decades the literature boasts literally thousands of studies documenting the effectiveness of ABA for understanding and treating children's emotional and behavioral disorders. This methodology has produced an array of strategies such as differential reinforcement, shaping, chaining, token economies, extinction, differential reinforcement of other behavior (DRO), timeout, and response cost (Kazdin, 1994). Moreover, numerous studies have demonstrated that these strate-

gies can be used effectively in natural environments by caregivers and service providers, including teachers and parents.

Bandura's *Principles of Behavior Modification,* published in 1969, provided an account of the role of cognitive processes in influencing the acquisition and performance of behavioral sequences. Bandura's social learning model (Bandura, 1977) expanded the predictive power and intervention possibilities of ABA and spawned the development of cognitive behavior modification (CBM) (Kazdin, 1978; Patterson et al., 1992). At one end of the theoretical spectrum, the operant conditioning model emphasizes tight stimulus control, systematic consequation of external behavior, trial-by-trial learning, and situation-specific instruction. Social learning theory, in midspectrum, and CBM, at the opposite end, offer strategies for the rapid acquisition of behavioral sequences through observational learning, extension of intervention targets to internal or private events, behavioral self-regulation, and the potential of automatic generalization of behavior across situations and time. Perhaps most important, these approaches provide alternatives to operant determinism and reliance on strict external control. Whereas external control characterizes much of ABA, social learning theory and CBM allow individuals greater freedom to participate in the behavioral change process and ultimately opportunity to learn strategies that they can employ in a variety of settings to guide their behavior (Thoresen, 1973).

An emerging theoretical perspective also influenced by ABA and social learning theory is the interactional analysis developed primarily by Patterson and his colleagues. This perspective focuses on analysis of child–parent and child–peer social interactions and contextual variables such as employment, poverty, illness, community, attributions, attitudes, and ethnicity and how these contribute to antisocial behavior (Patterson et al., 1992). A major contribution derived from interactional analysis is the explication of the "coercive family process," which offers a behavior-analytic-based explanation of how children's aggressive behavior is instigated and maintained (Patterson, 1982).

In bridging the chasm between behavioral and constructivist theory, the formulations of social learning theory and CBM offer solutions to the ethical and philosophical concerns presented by operant conditioning and ABA. An account of significant early accomplishments in the advancement of CBM must include Homme's (1965) paper explaining how "coverants" or thoughts could be modified to alter external behavior and Kanfer and Karoly's (1972) analysis of the self-regulatory process. A host of developments in CBM emerged during the late 1960s and 1970s: rational emotive therapy (RET) (Ellis, 1970); Meichenbaum's self-instructional and metacognitive instructional procedures (Meichenbaum & Arsarnow, 1979); problem solving (D'Zurilla & Goldfried, 1971; Spivack, Platt, & Shure, 1976); self-control and social skills instruction (e.g., Goldstein, Sprafkin, Gershaw, & Klein, 1979). These advances laid the conceptual foundation for a number of current practices in classrooms, clinics, and treatment programs for children with E/BD.

Treatment Packages

Advances in theory and related research in ABA, social learning theory, and CBM also laid the groundwork for the development of multistrategy treatment packages. Treatment packages combine effective treatment components that professionals can implement in various situations. One of the earliest of these was Spivak and Shure's (1982) Interpersonal Cognitive Problem Solving program, which taught children interpersonal problem solving, planning, and perspective taking. Walker and his associates contributed ACCEPTS, a social skills curriculum (Walker et al., 1983) and two programs designed to reduce children's social aggression: CLASS and RECESS (Walker & Hops, 1993). Goldstein and Glick's (1987) Aggression Replacement Training (ART) combines strategies from social learning theory and cognitive behavior modification to teach social skills, anger control, and moral education—all targeted at reducing the incidence of juvenile delinquency. Goldstein's (1988) Prepare curriculum, an expansion of ART, involves instruction in problem solving, situational perception, stress management, empathy, recruitment of social models, cooperation, and group dynamics.

His Skillstreaming curriculum (Goldstein et al., 1979) provides a step-by-step guide used by teachers to teach a variety of social skills. The Clear Thinking program (Nichols, 1996) combines CBM, RET, and problem solving in a series of teachable activities for adolescents.

Model Programs

Advancements in ABA, social learning theory, and CBM have provided an array of strategies that parents, teachers, consultants, and other professionals can use to improve the functioning of children with E/BD (Zirpoli & Melloy, 1997). While these lend themselves to application in a variety of settings, the framework for their delivery often is in the form of structured programs and token economy systems in schools and residential settings. Emerging in the early 1960s, structured programs focused on providing predictable environments through clear expectations and consistent consequences for behaviors. Hallahan and Cruickshank (1973) demonstrated that a structured learning environment consisting of orderly surroundings, minimal distractions, and organized, systematic instruction could enhance learning for children with hyperactivity and attention deficits. Cruickshank's student, Norris Haring, successfully extended the structured learning environment to children with E/BD and showed how applying consistent and contingent consequences for appropriate behavior provided additional structure for teaching adaptive behaviors (Haring & Phillips, 1962; Haring & Whelan, 1965). A refinement of structured programs was token economy systems, which began to appear in public classrooms in the late 1960s.

Hewett's (1967) engineered classroom provided a structured curriculum in a series of seven task levels—attention, response, order, exploratory, social, mastery, and achievement. Having different classroom centers for various activities appropriate for the children's need for structure foreshadowed later levels-system approaches to managing academic and social behavior. A series of outcome studies in the early 1970s demonstrated the effectiveness of structured classrooms for children with E/BD. Classroom management strategies based on structuring remain in widespread use today.

Systematic Instruction

Advances in behavioral assessment and change technology have provided rich resources for managing children's problem behaviors in educational settings. Another issue for professionals concerns the alarming academic underachievement of children with E/BD (Kauffman, 1997). Again, the work of Skinner provided a heuristic for others in developing a technology of instruction. Although Pressey had invented a teaching machine in the early 1920s, it focused primarily on providing learners with corrective feedback. Drawing from his work on analysis and shaping behavior, Skinner refined Pressey's contribution by adding the elements of carefully sequenced, linear frames, priming a response to guarantee its correctness, fading of prompts, and branching to easier levels based on an assessment of the learner's responses. These techniques all focused on presenting information to minimize learner errors and to maximize correct responses, an approach later termed *errorless learning.*

Skinner developed a strong interest in applying behavior analytic techniques to education, and, in the late 1950s and 1960s, he designed a succession of teaching machines that systematically presented concepts for learners to master and provided instant feedback regarding the correctness of their responses. These procedures, which he termed *programmed instruction,* provided a template for others to develop programmed instructional materials and served as the basis for many computer-based instructional programs (Vargas & Vargas, 1992).

Instructional practices in the field of special education have been profoundly influenced by applied behavior analytic techniques. At least two approaches to providing systematic instruction emanated from Skinner's educational pioneering: Precision teaching (PT), developed by Lindsley (1972), emphasizes finely sequenced objectives and graphic analysis of learner's responses. Direct instruction (DI) evolved from the work of Bereiter and Engelmann in collaboration with Becker and Carnine. PT provided the nucleus of a number of studies that demonstrated it to be highly effective in teaching children concepts (e.g., Deno, 1985; Fuchs & Fuchs, 1986).

Of the two approaches, DI is better known and more pervasive in the field. It offers a theory of curriculum and instruction based on concept analysis, principles for presenting material, teaching techniques, and program design strategies. Over the last three decades, various aspects of these components have been studied and revised, based on learner outcomes. DI's efficacy in providing instruction has been evaluated in two of the largest curriculum studies undertaken in the field of education: Follow Through and Head Start. In each case, DI and other behaviorally based approaches such as the Kansas Behavioral Analysis Model have proven significantly more effective than other methods.

Over all, evidence of the effectiveness of behavioral strategies, programs, and treatment packages for ameliorating the behavioral and academic problems of children with E/BD has been positive (Peacock Hill Working Group, 1991; Zirpoli & Melloy, 1997). However, despite the remarkable advances in behavioral theory and intervention strategies that have occurred over the past three decades, their application in the field—both by regular and special education practitioners—has been disappointing. Knitzer and her colleagues (Knitzer, Steinberg, & Fleisch, 1990), in an extensive national study of school programs for children with E/BD, found that the programs characteristically overemphasized and misused token economies, rarely used academic teaching strategies, offered few opportunities to learn adaptive social skills, provided limited access to counseling and therapy services, and paid little attention to helping students with developmental or programmatic transitions.

3 Best Practices

The concept of best practice with regard to educational programs and interventions for children has no definitive point of origin. In their seminal article describing the dimensions of applied behavior analysis, Baer, Wolf, and Risley (1968) described additional characteristics constituting a set of criteria for applied behavioral research. Such research should be technological, meaning that "the techniques making up a particular behavioral application are completely identified and described" (Baer et al., 1968, p. 95). It also should be conceptually systematic in terms of being relevant to underlying principles (e.g., positive reinforcement, stimulus control), being effective (i.e., showing effects large enough to have practical value), and showing generality (i.e., being durable over time, extending over a wide variety of environments or to a wide variety of behaviors).

These requirements suggest that a criterion of empirical verification should be the sine qua non of best practice. Over the brief history of applied behavior analytic research, it has been demonstrated that the contingent presentation of stimuli has reliable and replicable effects on the behaviors the stimuli follow. Depending upon the nature of the consequent stimuli that are presented, this paradigm has been shown to strengthen existing desired behaviors and reduce existing undesired behaviors, both in individuals and in groups of children (see Nelson, 1981, 1987; Nelson & Polsgrove, 1984; Nelson & Rutherford, 1988; Rutherford & Nelson, 1988 for reviews of this research). A set of procedures for teaching novel responses also has been validated. These best practices include those involving systematic prompting and reinforcement of succes-

sive approximations to targeted desired behavior (generally referred to as *errorless learning* and *shaping strategies*), as well as the effective teaching practices included under the DI label (for reviews, see Gersten, Carnine, & Woodward, 1987; Polsgrove & Nelson, 1982; White, 1988). Research also has identified variables that characterize broader groups of practices, which are subsumed under the labels "effective classrooms" and "effective schools" (e.g., Bickel & Bickel, 1986; Brophy & Good, 1986).

Contemporary researchers continue to expand the depth and range of best practices. Recent developments include the explication and analysis of strategies that minimize the need to use aversive stimuli in addressing undesirable student behavior. These practices, known as *positive behavioral support (PBS),* are based on strengthening desired academic and social behaviors to replace maladaptive target behaviors. Because of the mandate to perform functional assessments and develop behavior support plans for students with disabilities as an alternative to excluding them from school, strategies based on PBS have received a great deal of recent attention.

Current Research and Practice

In the previous discussion, we showed that research from the behavioral perspective has informed and shaped professional practices with regard to interventions for students with or at risk of having E/BD. The emergence of PBS and other preventative and proactive intervention strategies embodies a shift from special education programs and interventions that attempt only to respond to challenging student behavior through exclusionary placements and strategies based on punishment. As attempts to provide effective prevention and intervention for students with or at-risk for E/BD continue, it is important to ensure that the most effective and efficient procedures are being adopted. To accomplish this, we must maintain a constant vigilance over our ideological biases and advocate for empiricism (Walker et al., 1998). Contemporary research has identified interventions that result in empirically validated

and desired student outcomes. Accordingly, this section provides an overview of current research findings and their implications for empirically derived best practices for students with and at-risk for E/BD.

Preventing Problem Behaviors

Contemporary interventions for problem behavior in general education settings increasingly have relied upon restrictive and aversive techniques, including student searches, metal detectors, school guards, and video monitoring (U.S. Department of Education, 1998). In addition, reactionary "zero-tolerance" school policies regarding student misbehavior have led to an increase in more punitive and exclusionary responses to problem behavior (Vail, 1995). While the immediate effect of these policies may be a feeling of security within the school building, research suggests that such practices are at best ineffective and at worst counterproductive (Mayer & Leone, 1998; Shores, Gunter, & Jack, 1993).

What has been missing in zero-tolerance policies is an emphasis on preventing challenging and disruptive behavior by focusing on the most obvious cause—academic failure. Evidence strongly suggests not only an association between low academic achievement and the purveyors of disruptive behaviors in our schools (Gunter & Denny, 1998; Rylance, 1997), but also a direct link that has gone largely ignored in student and school discipline policy. Research in best practice for creating safe learning environments is directed at outcomes for both the individual student and the school community as a whole.

The Academic/Behavior Connection

As Kauffman (1997) noted, "low achievement and behavior problems go hand in hand" (p. 247). The evidence of this connection is strong and continues to grow (Epstein, Kinder, & Bursuck, 1989; Walker, Colvin, & Ramsey, 1995). While defining the exact nature of this relationship may foster a "chicken and egg" controversy, it appears clear that the relationship is reciprocal (Bower, 1995; Kauffman, 1997; Walker et al., 1995). Functional assessments of such relationships reveal clear patterns of behavior that maintain

and reinforce both academic and behavioral failure—especially for students with E/BD (Gunter, Denny, Jack, Shores, & Nelson, 1993).

Predictability of Low Academic Achievement. Research has identified poverty and/or social class as being highly predictive of school failure and challenging behavior (Gierl & Harnisch, 1995; Patterson et al., 1992; Rumberger, 1987). Students from impoverished backgrounds come to school with more stress and less academic preparedness than their middle- and upper-income peers (Patterson et al., 1992). Adams (1988) found that children of wealthy parents often come to school with 1,000 hours of exposure to printed material, whereas children from impoverished backgrounds typically enter school with as few as 40 hours of such exposure. In the absence of effective and intense academic instruction, these children predictably will fail academically and will develop challenging behaviors to escape aversive academic tasks.

Predictability of Behavioral Difficulties from Low Academic Success. The majority of behavioral referrals originate in the classroom due to noncompliance with teachers' expectations for academic activities (Skiba, Petersen, & Williams, 1997). The aversive stimuli associated with repetitive and predictable classroom failures establish the impetus for challenging behaviors such as avoidance, withdrawal, and aggression. For many of these students, challenging behaviors serve the function of facilitating escape from aversive academic tasks (Gunter et al., 1993). Once such behaviors are reinforced, a pattern quickly emerges and students' misbehaviors become more frequent, leading to the chronic and pervasive behavioral challenges often observed in students with or at risk for E/BD (Walker et al., 1995).

Academic and Social Instruction

An implication of the well-established connection between academic failure and challenging behavior is that student success will be best facilitated through effective academic and social instruction. That is, we must make use of research-based technologies to provide skill-based instruction in the most effective and efficient manner possible. Applied research has established a clear link between

effective instruction and behavior (Becker & Carnine, 1980; Engelmann, Becker, Carnine, & Gersten, 1988; Kameenui & Darch, 1995).

One observation that can be extrapolated from this research is that students are more likely to engage in instructional activities that are designed to maximize the likelihood of success and minimize errors in acquiring targeted skills. The student who is successful in and enjoys an activity also has little incentive to disrupt the class or to act in ways that would precipitate his or her escape or exclusion from that activity. This indicates a need for better instructional practices with students with and at-risk for E/BD. Ironically, students with the most challenging behaviors typically receive the least teacher-directed instruction and academically engaged time (Wehby, Symons, Canale, & Go, 1998). Teachers avoid students with disruptive or challenging behavior, which reduces the amount of time these students spend academically engaged (Carr et al., 1991). Clearly, for students with challenging behavior, academic instruction must share an equal focus and urgency with social/behavioral programming in order to facilitate maximal success.

Focus on Replacement Behaviors. A clear understanding of the requisite skills that make up complex behaviors is critical to the effectiveness of instruction. For example, to perform long division a student must have existing skills in the areas of place value, subtraction, and multiplication. If the student lacks fluency in these areas, no amount of instruction in long division will be successful. Instruction must focus on the specific skills that predict success. When a student screams and tantrums under difficult work conditions, which predictably results in obtaining help from the teacher, instruction must focus on teaching the student to use a more appropriate replacement behavior and ensure that it results in a more predictable functional outcome than the problem behavior does. Thus, the teacher might provide the student with clear examples of how that same functional outcome (teacher assistance) can be obtained via an appropriate behavior (e.g., raising hand) and provide systematic opportunities to use this replacement behavior successfully. Instruction that ignores the predictability of the misrule

(tantrum behavior results in teacher assistance) will be ineffective (i.e., the student will continue to fail and to use unacceptable behaviors to access teacher attention).

Social instruction (i.e., teaching nonacademic behaviors) can be thought of in the same way. Instruction will be effective only when the behaviors being taught are specific replacements for existing problem behaviors or student-held misrules. Functional assessment of behavior provides a process by which the function or purpose of behavior can be identified. This technology is emerging as a tool for creating effective intervention plans for students with mild disabilities, especially for those with or at risk for E/BD (Fox, Conroy, & Heckaman, 1998; Sasso, Peck, & Garrison-Harrell, 1998). The basic rule of thumb is to replace the undesired behavior with a desired behavior that will serve the same function for the student. To accomplish this we need to (a) select an appropriate functional replacement behavior, (b) directly teach that behavior, and (c) facilitate access to the same functional outcome for the student. For example, if we determine that screaming serves to get the attention of the teacher, we must teach the student more appropriate behaviors for accessing the same outcome (e.g., raise hand, call name).

Direct Instruction. Contrary to popular belief, DI is not defined by teacher-led instruction, scripts, or rote memorization. Rather, DI refers to the systematic analysis, selection, and sequencing of examples that effectively present generalized rule relationships to students. The DI format involves presentation and modeling of multiple examples of the core skill and rule (e.g., silent "e" rule), followed by student practice with teacher assistance and feedback leading to gradual independent student practice—which is used as a test of student learning. Although DI has been proven effective across content areas and with a range of student abilities, ages, and behavioral challenges (e.g., Cole, Dale, Mills, & Jenkins 1993; Fielding, Kameenui, & Gersten, 1983; Kitz & Thorpe, 1995), its effect on achievement for students with a background of poverty and academic deficits is impressive (e.g., Becker & Carnine, 1980; Becker & Gersten, 1982; Tarver & Jung, 1995). As the research indicates, the DI technology represents the most effective and efficient method of

ensuring the success of students with E/BD, both academically and socially.

Generalization and Maintenance

For students with E/BD, generalization is perhaps the key ingredient to facilitating success. What good is acquisition of a skill if that skill is not portable with the student? That is, if the student cannot perform a skill outside of the classroom, with a different teacher, or in a different context, can we say that meaningful skill acquisition has occurred? As Rutherford and Nelson (1988) observed, "behavior change without generalization is merely the implementation of prosthetic rather than therapeutic control" (p. 278). Simply observing a change in behavior is insufficient to warrant the label of success unless that behavior can be demonstrated over time, across trainers, and in different settings and contexts.

The importance of generalization as an outcome is embedded within DI methodology. As described by its creator, Siegfried Engelmann, DI implies that teaching must "focus heavily on the teaching of generalizations, not rote learning. Generalizations represent efficiency, whereas rote learning represents inefficiency" (Adams & Engelmann, 1996, p. 4). In a real sense, the science of instruction and the science of generalization are inseparable, in that generalization is an outcome that must be specifically taught. Decades of research have made it clear that without purposefully calculated instruction generalization is unlikely to occur.

Principals of Generalization. In their seminal article, Stokes and Baer (1977) grouped generalization technologies into nine categories, summarizing the types being referred to and used in the scientific literature. However, Stokes and Baer's article was not intended to advocate the use of nine generalization strategies. Rather, it was intended to review then-current strategies and to assess their merit. Because a strategy was used does not mean that it was effective, and because it was effective does not mean that it was the most effective or efficient possible. To be most efficient when teaching a behavior that is eventually to be performed in a setting in which it has not been taught, the most effective methods possible should be

used. Rather than simply picking and using a traditional method, the responsible practitioner will select a multimethod package that uses the range of effective techniques identified by Stokes and Baer and further refined by others (e.g., Scott & Nelson, 1998; Stokes & Osnes, 1989). One such method, general case programming, combines these strategies into a consistent package, anchored by a sound stimulus control conceptualization of both acquisition and generalization.

General Case Programming. The science of generalization is represented by an instructional framework known as *general case programming* (Engelmann & Carnine, 1982). The general case has been taught when a stimulus class (e.g., directions given by any teacher) controls an appropriate response or class of responses (e.g., compliance), so that these responses occur when occasioned by that specific stimulus class. The efficiency of this model is evident when contrasted to the single case model, wherein a behavior is controlled by a single stimulus. For example, a student might be taught to reliably recognize a particular anger-provoking situation and to respond appropriately (e.g., walk away from the perpetrator). Under a general case programming model, the student would be taught to recognize classes of anger-provoking stimuli, allowing him or her to respond successfully not only to that particular situation but to an endless range of similar, yet critically different situations. General case programming is accomplished via the following six major procedural steps:

1. Defining all of the possible stimulus situations under which the behavior might be expected to occur.
2. Defining the range of stimulus/response variability that exists.
3. Selecting a representative sample of positive and negative examples.
4. Sequencing teaching examples to demonstrate the range of positive instances followed by the minimally different nonexample.
5. Teaching the examples via a DI (model, lead, test) format.
6. Testing students using untrained examples.

Studies of DI methodology have established that student success is directly related to the effectiveness of individually planned and delivered instruction. Effective instruction presents a range of examples, foresees and teaches strategies to avoid potential errors, plans for practice and remediation, and facilitates success in natural environments. These same validated instructional principles also can be applied to school systems, preventing problem academic and social behaviors by planning and teaching procedures that predict success across all students.

Positive Behavioral Support

School systems in the United States present a dismal picture. Approximately 135,000 guns are brought into our schools each day (National School Boards Association, 1993); 23% of students and 11% of teachers report having been a victim of violence in or around school (Metropolitan Life Insurance Company, 1993); and as many as 8% of students report missing school specifically because of the fear of violence (Centers for Disease Control and Prevention, 1995; Hranitz & Eddowes, 1990). Because disruptive and dangerous behaviors are exhibited across a range of students and affect virtually all staff and students in a school, effective interventions must be designed, implemented, and evaluated by a school-wide team of regular and special education teachers, administrators, and staff.

Proactive system-wide planning for the prevention of academic and social failure, with plans for the most effective interventions for students at risk and those who have disabilities, is known as positive behavioral support (PBS) (Scott & Nelson, in press). PBS consists of three levels of intervention: (1) universal interventions across the school; (2) targeted interventions for small groups of students for whom preventative and less intensive universal interventions are not effective; and (3) intensive interventions for the most challenging individual students.

PBS systems are proactive, in that they are planned to prevent problem behavior. Each successive level of this hierarchy represents a more intensive degree of specific intervention planning. By establishing multilevel interventions and basing decisions regarding

which level to apply on students' responses to less intensive interventions, schools can use available resources more efficiently and effectively, while also reducing the wholesale use of strategies whose effectiveness diminishes with overuse (e.g., punishment, exclusion).

Universal Interventions. Universal interventions are proactive strategies for supporting appropriate student behavior and responding effectively to minor infractions of school expectations and rules. Research has demonstrated that school-wide practices (e.g., establishing and teaching school rules and expectations to students, assessing and adapting physical arrangements, creating area routines, improving the supervision of students, developing consistent responses to undesirable student behavior) significantly reduce school disciplinary referrals (Nelson, 1996; Walker et al., 1996). Other universal practices at the classroom level have been shown to affect student behavior positively. These include effective instruction (Kameenui & Darch, 1995), increasing rates of teacher praise and attention to desired student behavior (Gunter et al., 1993; Shores et al., 1993), and systematic classroom management strategies (Kerr & Nelson, 1998).

Although a significant proportion of students are involved in behaviors warranting disciplinary referral at some time during their schooling, the majority of behaviors leading to suspension generally are exhibited by a relatively small number of students (Contenbader & Markson, 1994). Research indicates that multiple family stressors set the occasion for children's future behavioral difficulties (Patterson et al., 1992), and that significant adjustment problems can be predicted at a very early age simply by the presence of specific antisocial behaviors (Hinshaw, Han, Erhardt, & Huber, 1992). These findings suggest that, in conjunction with multilevel interventions for positive behavioral support, systematic screening procedures can be used to identify students whose current behaviors are predictive of E/BD early in their school careers. At this point, staff in general education settings can provide targeted interventions, thereby preventing placement of the students in special education.

Targeted Interventions. The outcome of early identification is not intended to be a referral for special education eligibility evaluation. Rather, early identification should lead to early intervention planning and implementation by professionals who are responsible for the general education program (a practice that some states have adopted as prerequisite to special education referral). Once a child has been identified as being at risk, student effectiveness or child study teams should be involved in developing targeted interventions. These interventions usually are straightforward and relatively simple adjustments in the student's curriculum, schedule, or physical setting (e.g., changing reading groups; providing written directions, prompts, or cues; allowing more transition time; changing seating arrangement; assigning a peer tutor). Targeted interventions represent the most direct method of proactive intervention with children who have been identified as at risk for E/BD. Furthermore, early intervention has been verified as a best practice (Forness, Kavale, Blum, & Lloyd, 1997). Targeted interventions also may be more sophisticated, involving, for example, individual contingency contracts, social skills instruction groups, and individual behavior plans. These interventions are appropriate for students who are at risk for E/BD as well as those who have been identified, regardless of whether they are served in special or general education settings.

Intensive Interventions. Coordinated through wraparound planning, intensive interventions also may be implemented to meet the needs of both students who have and those who are at risk for developing E/BD. Wraparound planning involves the creation of a team of persons who know, care for, and provide services to children and youth with emotional and behavioral needs. Wraparound teams typically include family members and often the child himself or herself, in addition to professionals. The planning process involves identifying strengths and resources within the child and the team, as well as the resources and services needed to help the child function adequately in the settings where problems exist. The plan is designed with the flexibility needed to address goals in each relevant life domain. Although wraparound planning has been

practiced extensively in community-based systems-of-care programs operated by child welfare and mental health agencies, its relevance and value in educational planning and service are only now being demonstrated.

4 Issues, Needs, and Promises

We have attempted to demonstrate the relevance of the behavioral perspective and its impact on working effectively with students who exhibit a wide range of challenging behavior. While contributions of behavioral scientists are gaining increasing recognition and adoption as best practices in schools, criticism from a variety of detractors continues. Behaviorism is associated with stereotypic notions such as (a) it is not concerned with the whole child, including the child's thoughts and feelings; (b) it is mechanistic; (c) it forces mindless conformity; and (d) it is simplistic (Nelson, 1987). It even has been argued that the use of contingent reinforcement is unnatural and detrimental to children (Kohn, 1993). The recent dialogue regarding paradigm shifts, deconstructionism, and postmodernism has popularized a rejection of the scientific method as a means of understanding human behavior (see Kauffman, 1999; Walker et al., 1998).

On the other hand, countless practitioners, having been exposed to brief after-school workshops conducted by persons who may have less than adequate knowledge of behavioral technology, attempt to implement behavioral interventions with students and fail. When this happens, they blame the technology instead of a lack of the appropriate training, supervision, and ongoing technical assistance that are needed to ensure successful outcomes when dealing with the complex world of children's behavior problems. Unfortunately,

the person who suffers most from the failure of inadequate, poorly designed, and misapplied behavioral interventions is the child.

It is convenient to blame intervention failures on characteristics within the student, and to move him or her to more restrictive or institutional settings based on the premise that the student is "too disabled" for the program or intervention. This pattern is a perfect example of negative reinforcement: Behavior that removes or avoids an aversive stimulus is reinforced. Research by Carr and colleagues (1991) and Gunter and colleagues (Gunter et al., 1993, 1994) has documented this phenomenon with regard to interactions between teachers and students who exhibit disruptive behavior. In the following paragraphs, we identify some of the outstanding needs with regard to behavioral methodology and offer suggestions for addressing them.

A Search for Solutions

As educators and the public become increasingly convinced that children and youth today are more aggressive and violent than they were in the past, and as our exposure to instances of such behavior in the media is accelerated, a climate is being created that endorses a search for more effective solutions. Unfortunately, this climate also supports professional and public attitudes that favor zero tolerance for misbehavior and reactionary, punitive, and exclusionary disciplinary policies that have a dismal record of effectiveness. The only outcome such measures accomplish is short-term pain relief through removal of the offending student. The long-term outcomes, in terms of societal costs (e.g., institutionalization, incarceration, loss of productivity) are ignored by those who advocate for "getting the thugs out of school." We have argued that advances in the technology of behavioral intervention, including multiple levels of prevention and intervention through positive behavioral support, offer great promise. However, as Sugai and colleagues (1998) have observed, the capacity of the host environment must be improved in order to ensure effective implementation. We believe that a number of innovations will facilitate this outcome.

Need for Early Identification and Intervention

In the past few years, best practices with regard to behavioral interventions have expanded well beyond the traditional reactive and punitive strategies to a set of integrated approaches that include prevention, teaching functional replacement behaviors, and responding appropriately to problem behaviors. The importance of early identification and intervention is being recognized increasingly (cf. Walker et al., 1996), and the ability to intervene early and proactively is facilitated by systematic screening procedures for identifying students who are at risk for a variety of behavioral problems, including antisocial behavior and E/BD (Fiel, Severson, & Walker, 1994; McConaughy & Achenbach, 1989; Walker & Severson, 1990).

As we have pointed out, recent research on functional assessment of violent and aggressive behavior is extending the concept of teaching and supporting desired replacement behaviors from the population of students with moderate and severe disabilities to those who have or are at risk for E/BD. Unfortunately, the Individuals with Disabilities Education Act (P.L. 105-17) continues to support a reactionary approach, in that it requires only that such assessments be conducted when a behavioral incident occurs that drives consideration of alternative placement, instead of when disruptive behaviors occur. Hopefully, as schools' capacity to provide meaningful behavioral supports for all students improves, so will their ability to craft early targeted interventions based on functional assessment.

Need for Staff Development

To achieve the goal of institutionalizing the practices we have described, some fundamental changes must occur in the way schools work with regard to students who may or do exhibit challenging behavior. First, schools must take ownership of students with behavioral problems, just as they do for students with learning problems (Eber, 1996). Teaching and supporting desired student behavior and effectively managing problem behavior are skills that must be in the repertoires of all school staff, not just a handful of teachers with credentials in E/BD. School is a place where children learn how to behave appropriately, and most do so without system-

atic instruction. However, unless more staff know how to teach and reinforce skills that help students survive in school, students who are most vulnerable to suspension, expulsion, and dropping out will continue to be marginalized, and their lower levels of participation in the academic curriculum will decrease their chances of achieving literacy. The staff development needed to accomplish this will not take place through one-shot after-school workshops, conference presentations, and other brief training experiences. Instead, school-wide training should occur, followed by consultative support and technical assistance by qualified behavior specialists who are school based.

The current model is backward: Teachers who are effective with behaviorally challenging students are punished by being given more such pupils and limited or no technical assistance or consultative support. Similarly, pupils are likely to receive no supports or services for their behavior problems until they reach the point at which they are identified as qualifying for special education services. Given the disincentive for identifying students as having E/BD that originated from the *Honig v. Doe* (1988) litigation, it is unlikely that the number served under this special education category will ever reach even the conservative 2% prevalence estimate.

Today, advances in technology are making better support for students with challenging behavior and their teachers possible. For example, Web pages provide information, resources, and links to other practitioners (Meers & Nelson, in press); interactive training curricula are available on CD-ROM or Web formats, which can be accessed independently of higher education courses or professional development workshops (e.g., Liaupsin, Nelson, & Scott, 1999). We envision a system in which classroom teachers are supported by these training opportunities in addition to the consultation and technical assistance offered by behavioral specialists. In turn, behavioral specialists are supported by ongoing training and technical assistance strategies, which they access through their local university, regional resource center, or state department of education.

The School Safety Issue

The current focus on school safety may provide an opportunity to improve the context for understanding and using strategies from the behavioral perspective. We hope that school safety will come to be viewed as a community problem and that communities also will understand that schools are safer when the needs of all students are addressed. The link between school safety and school effectiveness, including the retention and achievement of students, needs to be emphasized through vigorous public awareness campaigns. Through school reform legislation, as well as state education agency and school district policies, the measurement and maintenance of these desired outcomes should be promoted.

Advantages of Behavioral Interventions

As we hope this narrative has documented, behaviorism has a substantial record of effectiveness over time and across a variety of contexts. Throughout its history, it has continued to evolve with the ever-changing needs of practitioners and their constituency—children and youth with emotional and behavioral challenges. One measure of the importance of the behavioral model is the number of its detractors, who continue to advocate for paradigm shifts and alternative strategies. While skepticism—even criticism—is healthy, practitioners should beware of intervention approaches that promise quick fixes and simple solutions (Kauffman, 1999). The allure of these promises must be balanced against the knowledge that all behavior exists in a social context, and that one cannot successfully change behavior without also understanding and changing the context.

The advantage of behavioral interventions in this regard is their careful, systematic analysis of this context and the targeted behavior and their application of the scientific method to demonstrate the

efficacy of strategies used. *Prediction* and *control* are terms that may alienate some of those who hold postmodern world views, but the demonstrated ability to predict and control aberrant behavior has led to solutions for extremely challenging behaviors. As public and professional concerns grow regarding such issues as school safety and children with violent and aggressive behavior, we hope the expectation for strategies with proven records of effectiveness will become the standard.

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